simart
technology

QSP®
QUALITY
SURFACE
PROTECTION

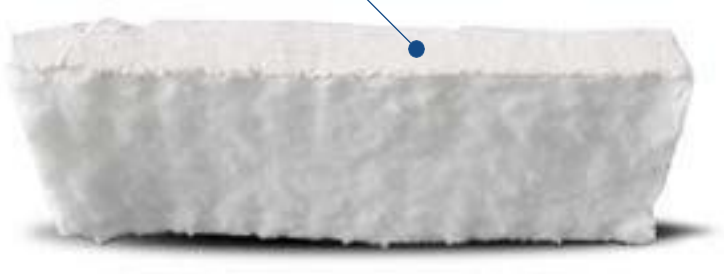
Health, Safety and Environment

Over the years Simart Technology has developed a project called ***QSP® (Quality Surface Protection)*** as a coating products line for thermal insulation surfaces in industrial furnaces, aimed at the SAFETY OF HUMANS AND THE ENVIRONMENT IN THE FIELD OF THERMAL INSULATION with particular reference to ceramic fiber.

The basic product of the line is ***QSP® Incapsulating***, a fluid mixture that sprayed on the fibrous coating penetrates to a thickness between 3 mm and 5 mm.

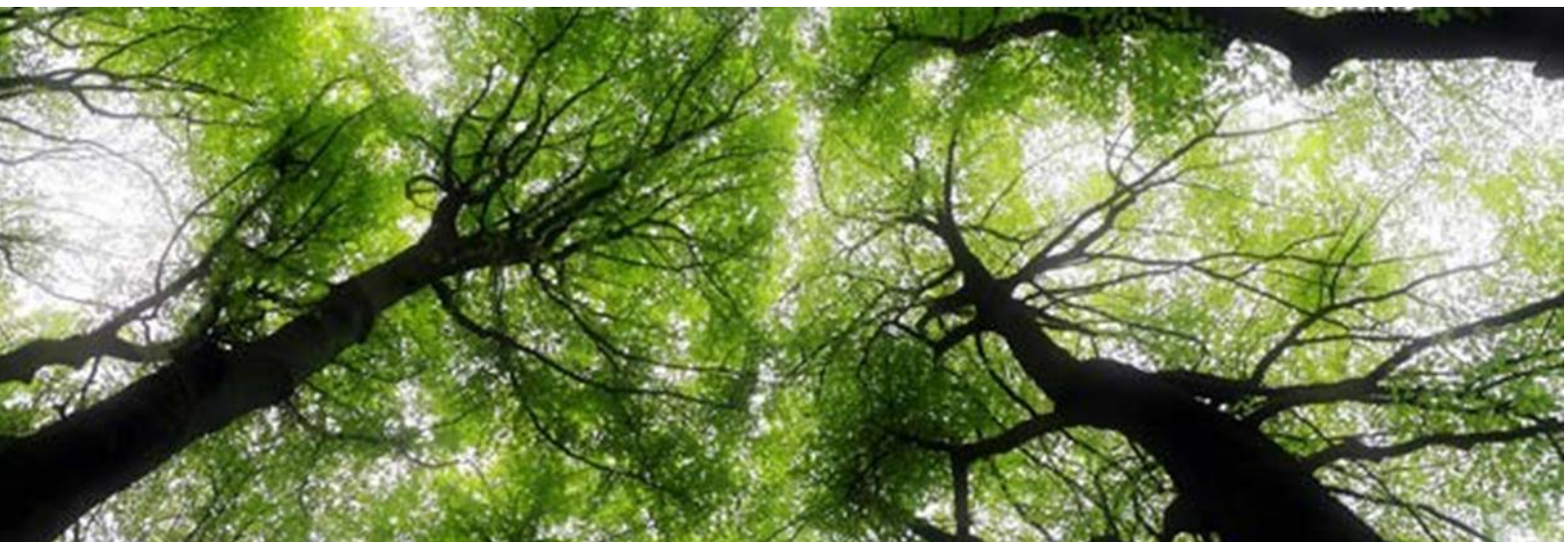
Once dried, it generates a hard incapsulating layer that reduces the release of fibrous dust and counteracts mechanical abrasions and the erosive action of gaseous fluids.

Through collaborations with institutes certified by the Italian Ministry of Health we tested ***QSP® Incapsulating*** on ceramic fiber insulating surfaces and found a reduction of volatile particles up to 93%.



INCAPSULATING

Sample A	
M1	7,4 mg/cm^2
M2	7,7 mg/cm^2
M3	4,8 mg/cm^2
M4 (Treated Surface)	**0,1 mg/cm^2**



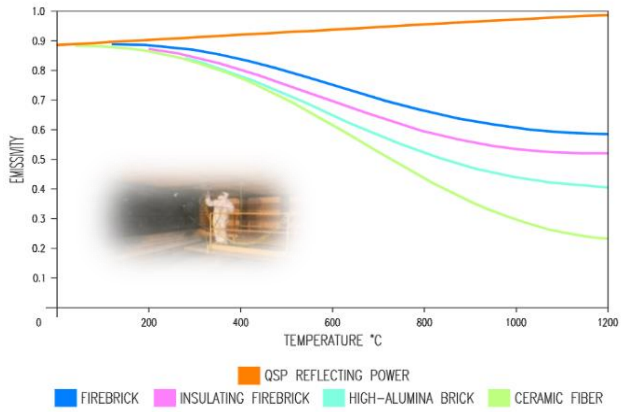
Development In Collaboration With Customers

QSP® Reflecting Power is a ceramic matrix micronized ceramic matrix micronized high-emissivity product, finalized by us in order to optimize the radiant heat in industrial furnaces. It it can be applied on fibers, insulating bricks and concrete coatings reducing the porosity of refractory materials.

Simart Technology has tested ***QSP® Reflecting Power*** directly in the customer's plants. The results confirmed that the radiating capacity of the product allows an increase in thermal transfer to the load, improving thermal efficiency. It also reduces climb times, improves uniformity and decreases energy consumption.

When ***QSP® Reflecting Power*** is applied to refractory linings they absorb the heat and then radiate it onto the charge inside the system. In addition to energy savings, the reduction of the energy absorbed by the coating will allow for faster heating and faster temperature recovery when charges are cold inserted, shortening cycle times, increasing and improving productivity.

REFLECTING POWER



Experimentation

QSP® EG

Used in electric arc melting furnaces.

The research aims to establish whether the application of the product may be able to significantly reduce self-consumption by high-temperature oxidation of the electrode during the manufacturing process.

In order to verify the antioxidant capacity of the product under examination, we performed oven heating tests of sample elements obtained from graphite nipples on which two different tests were performed, with hot and cold application of the QSP®EG.

The method involves the analysis, after the oven treatment, of graphite samples originally having the same weight and size characteristics, only one of which has been subjected to the preliminary application of QSP®EG.

At the end of the cooking cycle and after cooling in air, the applied product is removed and the two samples are weighed again. The difference in the final weight of the two samples gives the amount of graphite useful in a sample treated with QSP®EG compared to an untreated ideological element.

QSP® EG
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Typical Properties of Graphite Electrodes

Diameter	mm / inch	SIGRA-LF 350 - 450 / 14 - 18	MELT 350 - 450 / 14 - 18	MELT 500 - 650 / 20 - 26	MELT 700 - 800 / 28 - 32
Apparent Density	g/cm³	1.63 - 1.72	1.66 - 1.76	1.67 - 1.77	1.68 - 1.77
Specific Electrical Resistance	Ωμm	4.9 - 7.5	4.9 - 5.7	4.5 - 5.5	4.0 - 5.5
Flexural Strength	MPa	9 - 15	8 - 13	10 - 13	10 - 13
Thermal Conductivity	W/(K·m)	160 - 210	220 - 270	250 - 280	250 - 300
Coefficient of Thermal Expansion	μm/(K·m)	0.7 - 1.8	0.3 - 0.7	0.3 - 0.6	0.3 - 0.6

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